

ABSTRACT:

A safe high-performance lithium secondary cell is provided whereby bulging of a lithium secondary cell during storage at a high temperature, which is particularly problematic when a casing accommodating a cell element is a variable shape casing, is suppressed.

The present invention provides a lithium secondary cell comprising a cell element which comprises a positive electrode, a negative electrode and an electrolyte comprising a non-aqueous solvent and a solute, and a variable shape casing which accommodates the cell element, wherein the cell element contains an additive  $\alpha$ , and  $\Delta E_{add}(AN)$  is smaller than  $\Delta E_{sol}(AN)$ , where  $\Delta E_{sol}(AN)$  is the difference represented by  $E_{sol}(A) - E_{sol}(N)$ , where  $E_{sol}(N)$  is the enthalpy of a neutral molecule of the non-aqueous solvent, as obtained by a prescribed calculation method, and  $E_{sol}(A)$  is the enthalpy of an anion radical formed by giving one electron to the neutral molecule, and  $\Delta E_{add}(AN)$  is the difference represented by  $E_{add}(A) - E_{add}(N)$ , where  $E_{add}(N)$  is the enthalpy of a neutral molecule of the additive  $\alpha$ , as obtained by a prescribed calculation method, and  $E_{add}(A)$  is the enthalpy of an anion radical formed by giving one electron to the neutral molecule.